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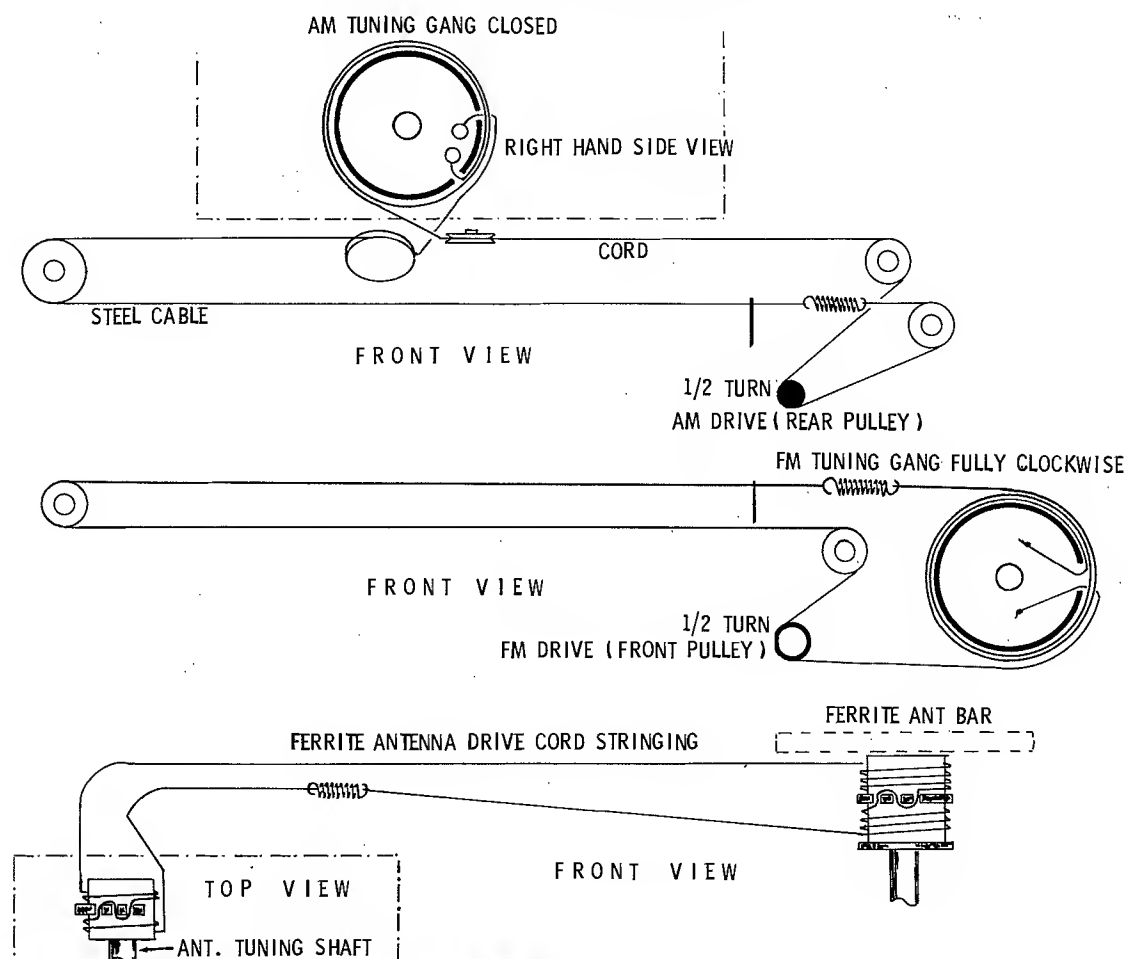
with CIRCUITRACE®

BLAUPUNKT MODELS Granada
61 (20303), Sultan (20203)

MODEL Granada 61 (20303)

TRADE NAME	Blaupunkt Models Granada 61 (20303), Sultan (20203)		
IMPORTER	N. Pickens Import Co., 64-01 Woodside Ave., Woodside 77, N. Y.		
TYPE SET	AC Operated 6 Tube FM-BC-SW Receiver		
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles	RATING	50 Watts, .5 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	515-1620KC	FREQ. MOD.	88-108MC SHORT WAVE 5.95 - 18.2MC

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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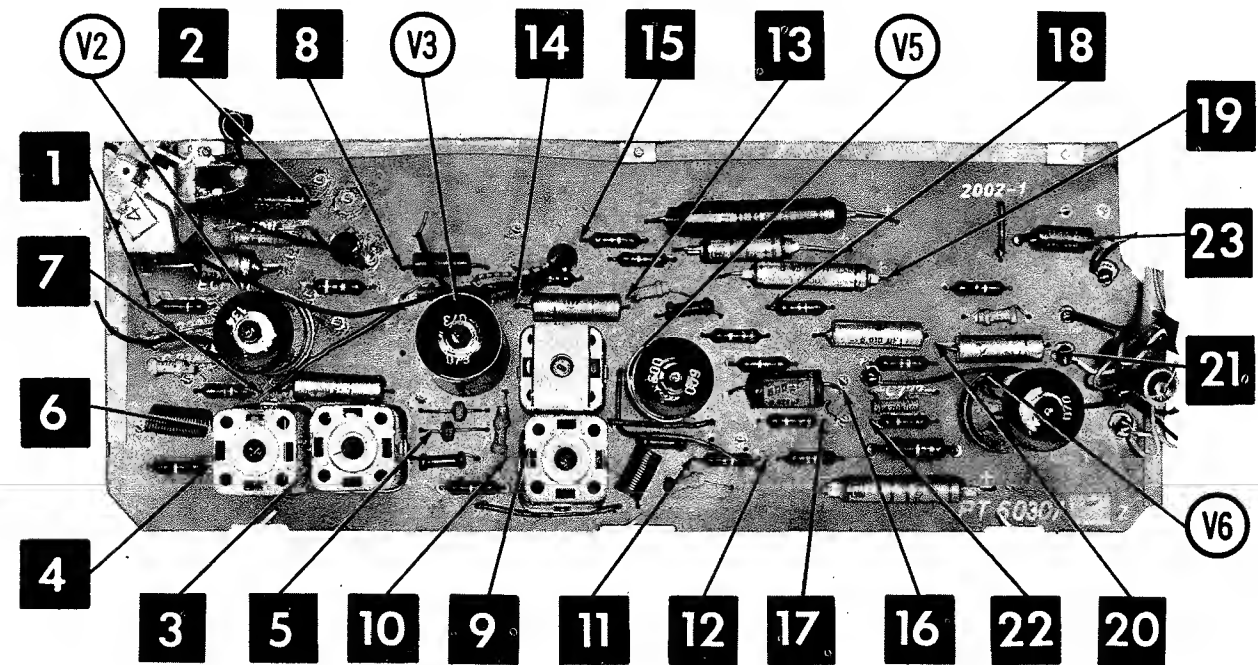
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SET 552

FOLDER 4

BLAUPUNKT MODELS Granada
61 (20303), Sultan (20203)BLAUPUNKT MODELS Granada
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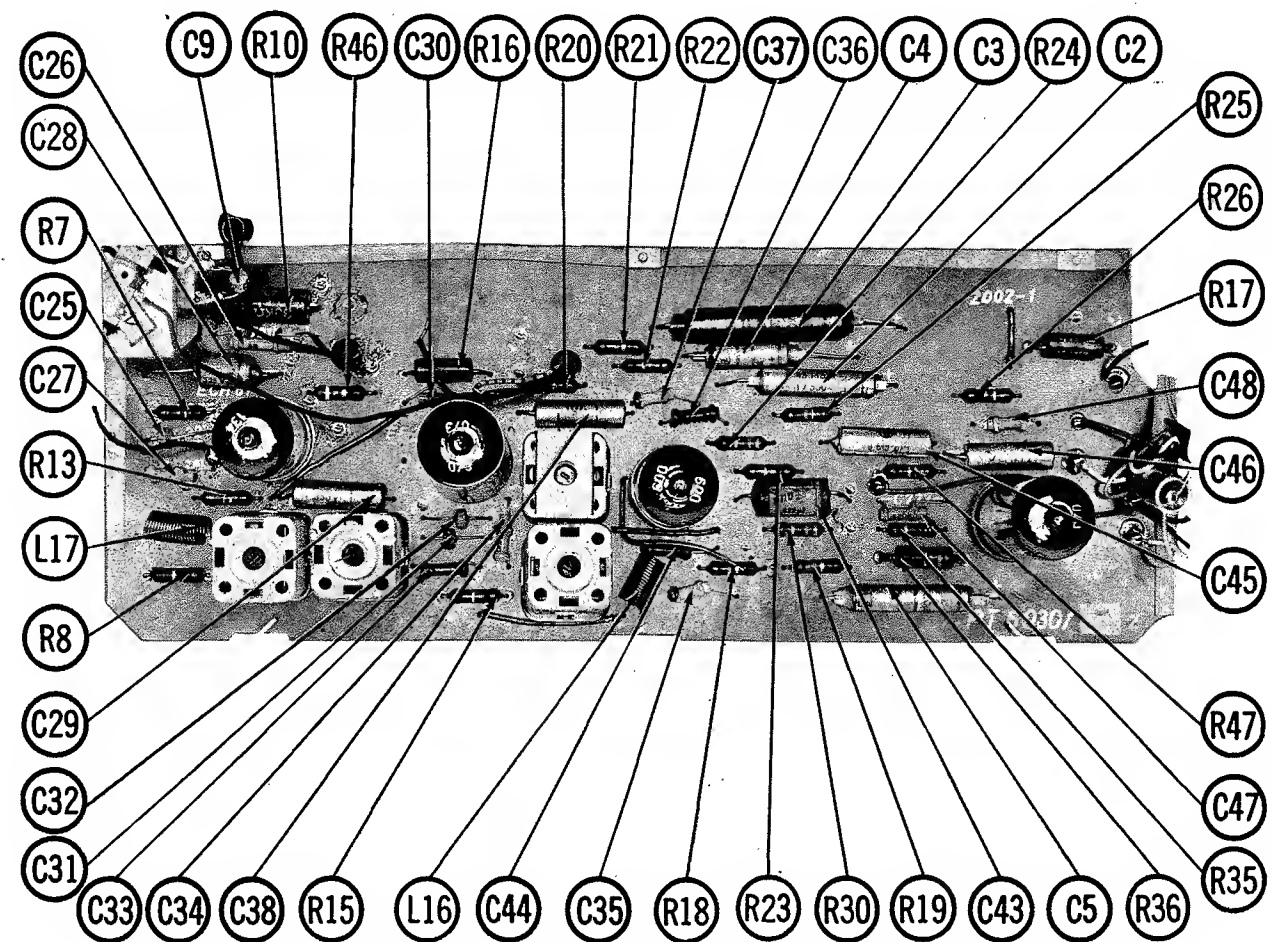
SET 552 FOLDER 4



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PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PRINTED BOARD

PARTS LIST AND DESCRIPTIONS

TUBES

GENERAL ELECTRIC • RAYTHEON • SYLVANIA				
ITEM No.	USE	TYPE	ITEM No.	TYPE
V1	FM RF Amp. -FM Conv.	ECC85	V4	Tuning Indicator
V2	1st FM IF Amplifier-AM Mixer-AM Osc.	ECH81	V5	AM Det. -A VC-AF Amp.
V3	2nd FM-1st IF Amp.	EF89	V6	Output

ELECTROLYTIC CAPACITORS

REPLACEMENT DATA				
ITEM No.	RATING	REMARKS	CORNELL DUBILIER PART No.	SPRAGUE PART No.
C1A	50 350		AFH-41	
C2	450 350		PSH680	
C3	4 350		PSH1700	
C4	2 30		PSH600	
C5	50 12		PTT88	
C6	4 12NP	Note 1	PS7405	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Not used in Model Sultan (20209).

FIXED CAPACITORS

REPLACEMENT DATA				
ITEM No.	RATING	REMARKS	CORNELL DUBILIER PART No.	SPRAGUE PART No.
C7	10 N150 5%		DTN-4R7	10TCP-Q10
C8	10 N150 5%		SI 200	10TCP-Q10
C9	200 .0027		D6-201	10TCL-V5
C10	51 N150 5%		D6-272	10TCL-V5
C11	3-15			10TCL-V5
C12	15 N150 5%			10TCL-V5
C13	6-25			10TCL-V5
C14	10-40			10TCL-V5
C15	47			10TCL-V5
C16	1 N750			10TCL-V5
C17	3-12			10TCL-V5
C18	.0051			10TCL-V5
C19	450			10TCL-V5
C20	470			10TCL-V5
C21	8-25			10TCL-V5
C22	47			10TCL-V5
C23	47			10TCL-V5
C24	47			10TCL-V5

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

REPLACEMENT DATA			REPLACEMENT DATA		
ITEM No.	BATING	REMARKS	ITEM No.	RATING	REMARKS
R4	1000Ω		R26	100K	
R5	10K		R27	2.2meg	
R6	390		R28	47K	
R7	1meg		R29	5K	
R8	1000Ω		R30	470Ω	
R9	27K		R31	2.2meg	
R10	33K 2W		R32	470K	
R11	470Ω		R33	1meg	
R12	27K		R34	100K	
R13	100K		R35	1000Ω	
R14	1.8meg		R36	100K	
R15	1000Ω		R37	2700Ω	
R16	47K 1W		R38	47K	
R17	2200Ω 1W		R39	15K	
R18	150K		R40	270Ω	
R19	330K		R41	100Ω	
R20	1meg		R42	100Ω	
R21	15K		R43	100Ω 3W	
R22	33K		R44	100Ω 3W	
R23	10meg		R45	1.8meg	
R24	4700Ω		R46	39K	
R25	220K		R47	220K	

COILS (RF-IF)

REPLACEMENT DATA			REPLACEMENT DATA		
ITEM No.	USE	REMARKS	ITEM No.	RATING	REMARKS
L1	Ant. Matching		L26	100K	
L2	SW Ant.		L27	2.2meg	
L3	RF Choke		L28	47K	
L4	460KC IF		L29	5K	
L5	BC Ant.		L30	470Ω	
L6	Loopback		L31	2.2meg	
L7A	SW Osc.		L32	470K	
L8	RF Choke		L33	1meg	
L9	BC Osc.		L34	100K	
L10	2nd FM IF		L35	1000Ω	
L11	1st AM IF		L36	100K	
L12	Ratio Del.		L37	2700Ω	
L13	2nd AM IF		L38	47K	
L14	Tone Choke		L39	15K	
L15	Tone Choke		L40	270Ω	
L16	Tone Choke		L41	100Ω	
L17	FIL. Choke		L42	100Ω	
L18	FIL. Choke		L43	100Ω 3W	
L19	FIL. Choke		L44	100Ω 3W	
L20	Line Choke		L45	1.8meg	

TRANSFORMER (POWER)

REPLACEMENT DATA			REPLACEMENT DATA		
ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
T1	SEC. 1		T2	SEC. 1	
	220V @ 1.5A			SEC. 2	
	140A AC			2.6A	

FIXED CAPACITORS (cont)

REPLACEMENT DATA			REPLACEMENT DATA		
ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
C25	1 NPO		C25	1 NPO	
C26	.0027		C26	.0027	
C27	.047 125V		C27	.047 125V	
C28	.01 350V		C28	.01 350V	
C29	.0047		C29	.0047	
C30	1 N705		C30	1 N705	
C31	.0047		C31	.0047	
C32	.0047		C32	.0047	
C33	.0047		C33	.0047	
C34	.0047		C34	.0047	
C35	.0047		C35	.0047	
C36	.0047		C36	.0047	
C37	.0047		C37	.0047	
C38	.0047		C38	.0047	
C39	.0047		C39	.0047	
C40	.0047		C40	.0047	
C41	.0047		C41	.0047	
C42	.0047		C42	.0047	
C43	.0047		C43	.0047	
C44	.0047		C44	.0047	
C45	.0047		C45	.0047	
C46	.0047		C46	.0047	
C47	.0047		C47	.0047	
C48	.0047		C48	.0047	
C49	.0047		C49	.0047	
C50	.0047		C50	.0047	
C51	.0047		C51	.0047	
C52	.0047		C52	.0047	
C53	.0047		C53	.0047	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Shilded Unit.

CONTROLS

REPLACEMENT DATA			REPLACEMENT DATA		
ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R1A	1.3meg		R1A	1.3meg	
R2	300K Tap		R2	300K Tap	
R3	1meg		R3	1meg	

TRANSFORMER (AUDIO OUTPUT)

REPLACEMENT DATA			REPLACEMENT DATA		
ITEM No.	IMPEDANCE	REMARKS	ITEM No.	IMPEDANCE	REMARKS
T2	4700Ω		T2	4700Ω	
	SEC. 1			SEC. 1	
	3-4Ω			SEC. 2	
	2.5%			470Ω	

SPEAKER

REPLACEMENT DATA			REPLACEMENT DATA		
ITEM No.	TYPE	REMARKS	ITEM No.	TYPE	REMARKS
S1	7"x10"		S1	7"x10"	
S2	4"		S2	4"	
S3	4"		S3	4"	

POWER RECTIFIERS

REPLACEMENT DATA			REPLACEMENT DATA		
ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
M1	.076A		M1	.076A	

FUSES

REPLACEMENT DATA			REPLACEMENT DATA		
ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
M2	3AG		M2	3AG	

MISCELLANEOUS

REPLACEMENT DATA			REPLACEMENT DATA		
ITEM No.	PART NAME	REMARKS	ITEM No.	PART NAME	REMARKS
M3	FM Tuner		M3	FM Tuner	
M4	Tuning Cap.		M4	Tuning Cap.	
M5	Switch		M5	Switch	

WIRING DATA

REPLACEMENT DATA			REPLACEMENT DATA		
ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
T1	220V @ 1.5A		T1	220V @ 1.5A	

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.

Set Short Wave Bandsread Pointer to "O".

Suggested Alignment Tools: Al thru A4.....GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987,

8988, 8989, 9291
WALSCO #2515 2520 2522 2523 2531 2532 2534 2537 2538

A5, A6, A7, A10, A11, A19, A20. GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988,

WALSCO #2515 2531 2532 8989

A8, A9, A12, A13, A15, A23, A24 GENERAL CEMENT #5000, 5003, 8276, 8290

A16 A17 A18 A21 A22 WALSCO #2512, 2515, 2522, 2523, 2525, 2537
GENERAL CEMENT #8282 8606 8606-I 9091

WALSCO #2526, 2541, 2542, 2543, 2544

AM ALIGNMENT - SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .01mfd to pin 2 (grid) of AM Mixer. Low side to chassis.	460KC (400% 30% AM)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	High side thru .01mfd to AM external antenna terminal. Low side to chassis.	"	600KC	"	A5	Adjust for MINIMUM output.
3.	"	6MC	(SW) 6MC	"	A6, A7	Adjust for maximum output.
4.	"	18MC	18MC	"	A8, A9	"
5.	"	550KC	(AM) 550KC	"	A10, A11	"
6.	"	1500KC	1500KC	"	A12, A13	Adjust for maximum output. Repeat Steps 3 thru 6.
7.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	550KC	(AM & F Ant.) 550KC	"	A14	Adjusted for maximum output by moving coil along ferrite core.
8.	"	1500KC	1500KC	"	A15	Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM - SELECTOR IN FM POSITION

Connect two matched 100K ($\pm 1\%$) resistors in series from point **A** to chassis. The junction of these two resistors is alignment point **C** as shown on the schematic.


	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	High side to an ungrounded tube shield over FM Conv. Low side to chassis.	10. TMC (Unmod.)	(FM) Point of non-interference.	DC probe to point Δ . Common to chassis.	A16, A17, A18, A19, A20	Adjust for maximum deflection.
10.	"	"	"	DC probe to point Δ . Common to point Δ .	A21	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE - SELECTOR IN FM POSITION

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120v sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
9.	High side to an ungrounded tube shield over FM Conv. Low side to chassis.	10. YMC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point \odot . Low side to chassis.	A16, A17 A18, A19 A20	Disconnect stabilizing capacitor C4. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown, Reconnect C4.
10.	"	"	"	Vert. amp. to point \odot . Low side to chassis	A21	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A16 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
11.	Across FM antenna terminals with 120Ω in each lead.	91MC (Unmod.)	(FM) 91MC	DC probe to point  . Common to chassis.	A22	Adjust for maximum deflection.
12.	"	105MC	105MC	"	A23	"
13.	"	100MC	100MC	"	A24	Adjust for maximum deflection. Repeat Steps 11, 12 and 13.

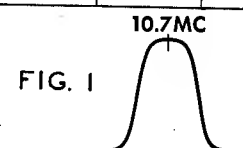


FIG. 1

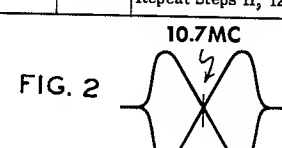
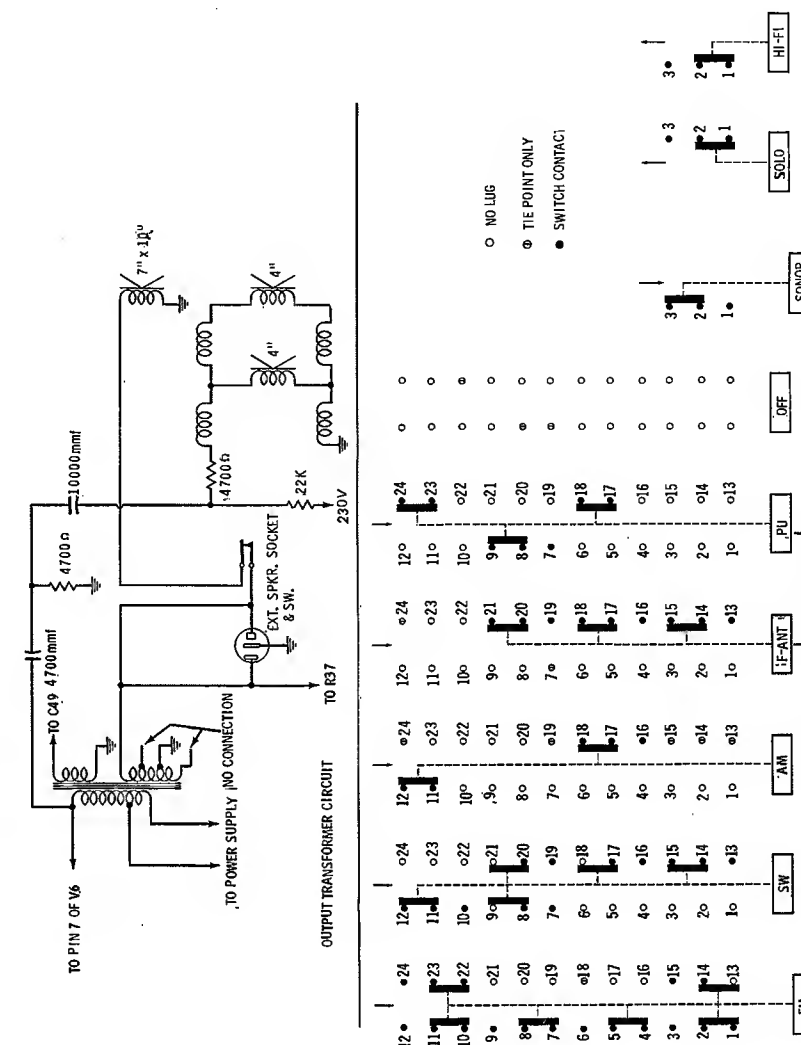
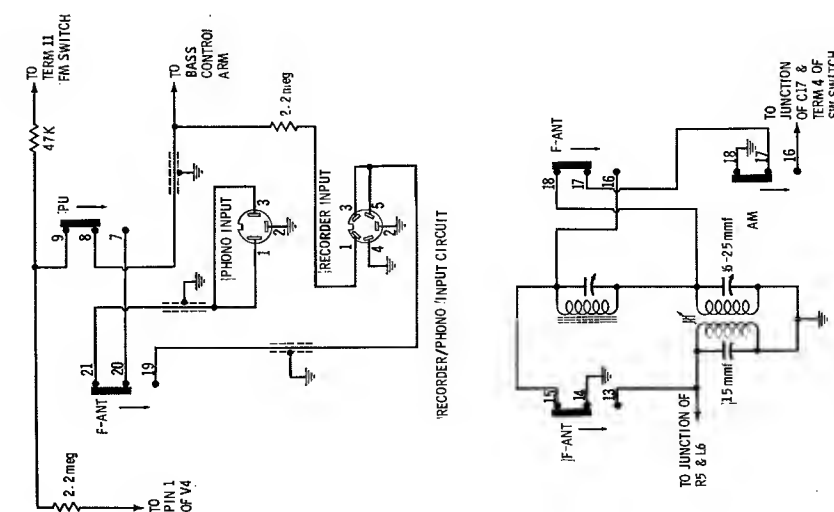


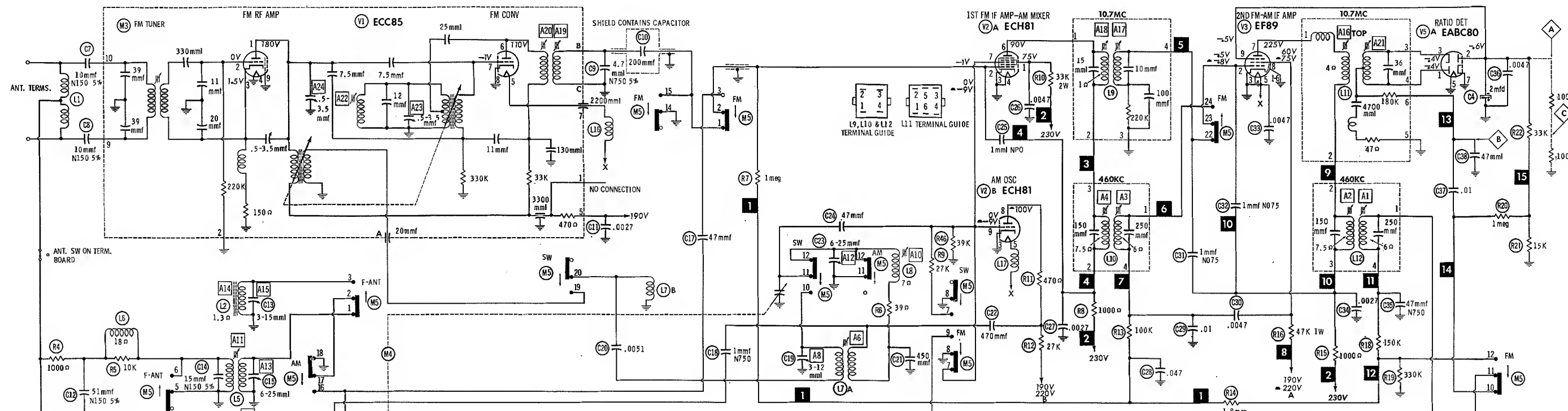
FIG. 2



FM & SONOR BUTTONS DEPRESSED



RF SWITCHING CIRCUIT



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85	13700Ω	220K	150Ω	FIL	FIL	137K	330K	0Ω	0Ω
V2	ECH81	134K	3.1meg	0Ω	FIL	FIL	12000Ω	0Ω	130K	39K
V3	EF89	0Ω	220K	0Ω	FIL	FIL	0Ω	12000Ω	150K	48K
V4	EM84	3.2meg	NC	0Ω	FIL	FIL	13200Ω	1470K	NC	1470K
V5	EABC80	INF	48K	INF	FIL	FIL	480K	0Ω	10meg	1325K
V6	EL84	NC	500K	160Ω	FIL	FIL	NC	1460Ω	NC	11000Ω

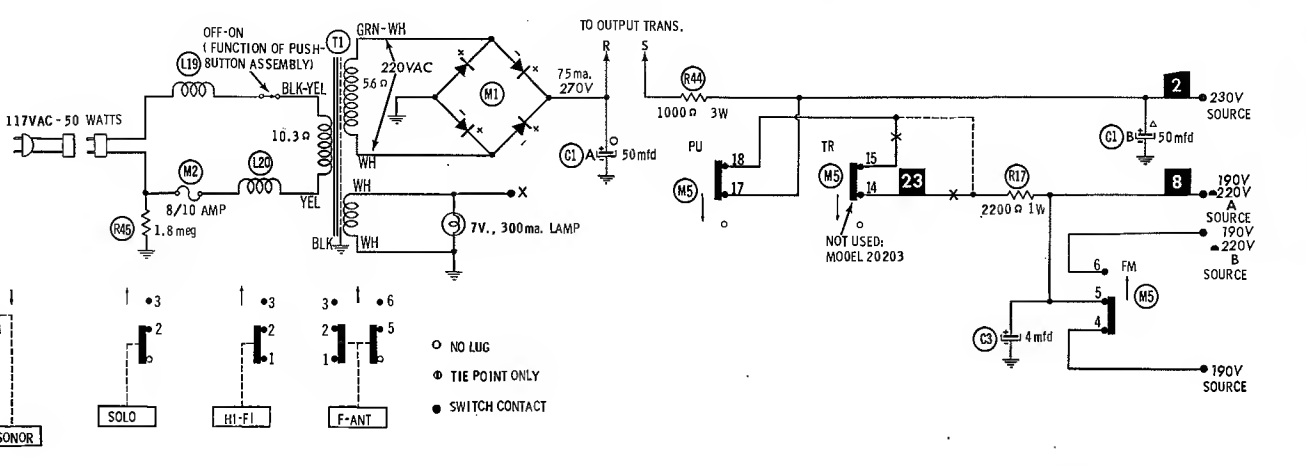
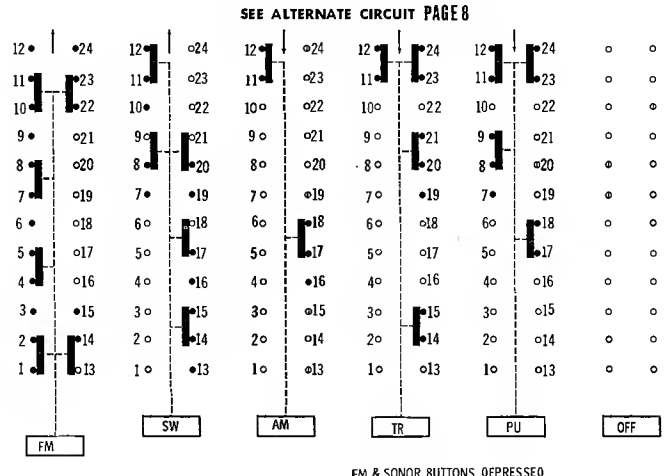
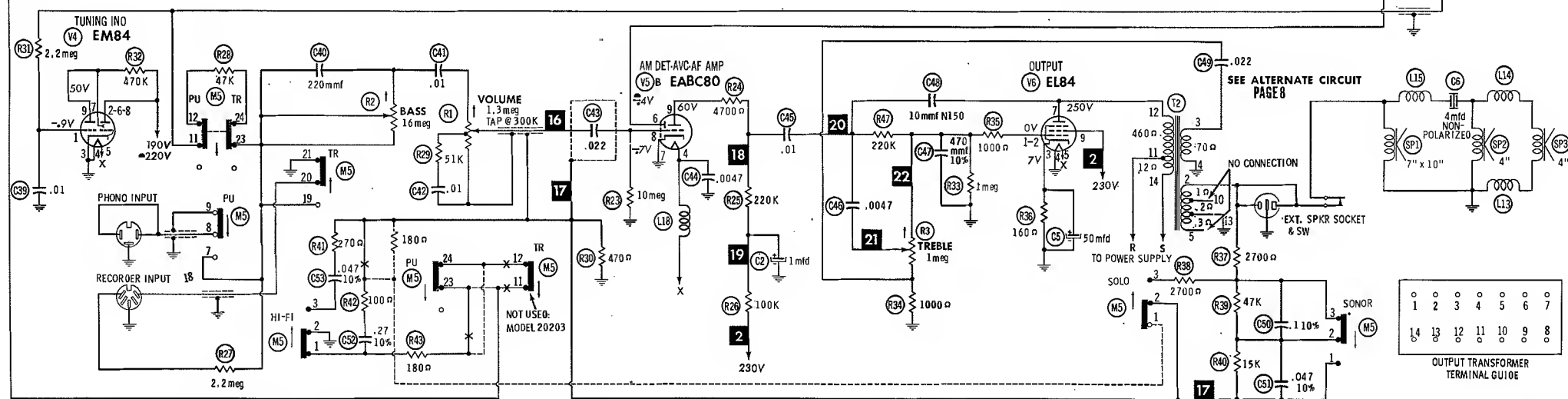
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
 * MEASURED IN "AM" POSITION.
 † MEASURED FROM OUTPUT OF M1. NC NO CONNECTION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
 ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

- DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
- Socket connections are shown as bottom views.
- Measured values are from socket pin to common ground.
- Line voltage maintained at 117 volts for voltage readings.
- Nominal tolerance on component values makes possible a variation of ±1% in voltage and resistance readings.
- Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with **CIRCUITRACE**
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